

**UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION**

LONE STAR SILICON INNOVATIONS LLC,

Plaintiff,

v.

UNITED MICROELECTRONICS
CORPORATION and UMC GROUP (USA),

Defendants.

Civil Action No. 2:16-cv-01216

JURY TRIAL DEMANDED

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff, Lone Star Silicon Innovations LLC (“Lone Star”), complains against Defendants United Microelectronics Corporation (“UMC”) and UMC Group (USA) (“UMC-USA”) (individually or collectively “Defendants”) as follows:

NATURE OF ACTION

1. This is an action for patent infringement of United States Patent Nos. 5,973,372; 6,103,611; and 6,388,330 (collectively, the “Patents in Suit”) under the Patent Laws of the United States, 35 U.S.C. § 1, *et seq.*

THE PARTIES

2. Plaintiff Lone Star is a corporation organized and existing under the laws of the State of Texas with its principal place of business at 8105 Razor Blvd., Suite 210, Plano, TX 75024. Lone Star is in the business of licensing patented technology. Lone Star is the assignee of the Patents in Suit.

3. Defendant UMC is a corporation organized under the laws of Taiwan, with its principal place of business at No. 3 Li-Hsin Road II, Hsinchu Science Park, Hsinchu City, Taiwan, Republic of China. Defendant UMC conducts business in and is doing business in Texas and in this District and elsewhere in the United States, including, without limitation, using, promoting, offering to sell, importing, and/or selling integrated circuit devices that embody and/or are made using the patented technology, and enabling end-user purchasers to use such devices in this District.

4. Defendant UMC-USA is a corporation organized under the laws of the State of California, with its principal place of business at 488 Dequigne Drive, Sunnyvale, CA 94085. UMC-USA's registered agent for service of process in the State of Texas is CT Corporation System, located at 1999 Bryan Street, Suite 900, Dallas, Texas 75201. On information and belief, UMC-USA is a wholly-owned subsidiary of UMC, and is responsible for all sales of UMC's integrated circuit devices in North America. Defendant UMC-USA conducts business in and is doing business in Texas and in this District and elsewhere in the United States, including, without limitation, using, promoting, offering to sell, importing, and/or selling integrated circuit devices and/or devices that incorporate memory devices that embody the patented technology, and enabling end-user purchasers to use such devices in this District.

5. Upon information and belief, UMC controls and is the majority owner of UMC-USA, and Defendants are joint tortfeasors with one another with respect to the matters alleged herein.

JURISDICTION AND VENUE

6. This action arises under the Patent Laws of the United States, Title 35 of the United States Code. This Court has subject matter jurisdiction over this action pursuant to 28 U.S.C. §§ 1331 and 1338(a).

7. On information and belief, Defendants are subject to this Court's specific and general personal jurisdiction pursuant to due process and/or the Texas Long Arm Statute, due at least to their substantial business conducted in this forum, directly and/or through intermediaries, including (i) having solicited business in the State of Texas, transacted business within the State of Texas and attempted to derive financial benefit from residents of the State of Texas, including benefits directly related to the instant patent infringement causes of action set forth herein; (ii) having placed their products and services into the stream of commerce throughout the United States and having been actively engaged in transacting business in Texas and in this District; and (iii) either alone or in conjunction with others, having committed acts of infringement within Texas and in this District. On information and belief, Defendants, directly and/or through intermediaries, have advertised (including through websites), offered to sell, sold and/or distributed infringing products, and/or have induced the sale and use of infringing products in the United States and in Texas. Each Defendant has, directly or through its distribution network, purposefully and voluntarily placed such products in the stream of commerce knowing and expecting them to be purchased and used by consumers in Texas and in this District. Each Defendant has either committed direct infringement in Texas or committed indirect infringement based on acts of direct infringement in Texas. Further, on information and belief, Defendants are subject to the Court's general jurisdiction, including from regularly doing or soliciting business,

engaging in other persistent courses of conduct, and/or deriving substantial revenue from goods and services provided to individuals in Texas and in this District.

8. On information and belief, Defendants do one or more of the following with integrated circuit devices and/or devices that incorporate such devices that they manufacture: (a) import these devices into the United States for sale to consumers, including consumers in Texas; (b) sell them or offer them for sale in the United States, including to customers in Texas; (c) sell them to customers who incorporate them into products that such customers import, sell or offer for sale in the United States, including in Texas.

9. Venue lies in this District pursuant to 28 U.S.C. §§ 1391(b), 1391(c) and 1400(b) because each Defendant is subject to personal jurisdiction in this District, resides in, has regularly conducted business in this District and/or has committed acts of patent infringement in this District. Without limitation, on information and belief, within this District Defendants, directly and/or through intermediaries, have advertised, offered to sell, sold and/or distributed infringing products, and/or have induced the sale and use of infringing products.

THE PATENTS IN SUIT

10. On October 26, 1999, U.S. Patent No. 5,973,372 (“the ‘372 patent”), entitled “Silicided Shallow Junction Transistor Formation And Structure With High And Low Breakdown Voltages,” a copy of which is attached hereto as Exhibit A, was duly and legally issued. The ‘372 patent issued from U.S. patent application Serial Number 08/986,283 filed December 6, 1997, and discloses and relates to the design of and processes for fabricating semiconductor devices. The inventors assigned all right, title, and interest in the ‘372 patent to Advanced Micro Devices, Inc. (hereinafter “AMD”). AMD assigned its entire right, title, and interest in the ‘372 patent to Lone Star, and Lone Star is the sole owner of all rights, title and

interest in and to the '372 patent including the right to sue for and collect past, present and future damages and to seek and obtain injunctive or any other relief for infringement of the '372 patent.

11. On August 15, 2000, U.S. Patent No. 6,103,611 ("the '611 patent"), entitled "Methods And Arrangements For Improved Spacer Formation Within A Semiconductor Device," a copy of which is attached hereto as Exhibit B, was duly and legally issued. The '611 patent issued from U.S. patent application Serial Number 08/993,830 filed December 18, 1997, and discloses and relates to the design of and processes for fabricating semiconductor devices. The inventors assigned all right, title, and interest in the '611 patent to AMD. AMD assigned its entire right, title, and interest in the '611 patent to Lone Star, and Lone Star is the sole owner of all rights, title and interest in and to the '611 patent including the right to sue for and collect past, present and future damages and to seek and obtain injunctive or any other relief for infringement of the '611 patent.

12. On May 14, 2002, U.S. Patent No. 6,388,330 ("the '330 patent"), entitled "Low Dielectric Constant Etch Stop Layers In Integrated Circuit Interconnects," a copy of which is attached hereto as Exhibit C, was duly and legally issued. The '330 patent issued from U.S. patent application Serial Number 09/776,012 filed February 1, 2001, and discloses and relates to the design of and processes for fabricating semiconductor devices. The inventors assigned all right, title, and interest in the '330 patent to AMD. AMD assigned its entire right, title, and interest in the '330 patent to Lone Star, and Lone Star is the sole owner of all rights, title and interest in and to the '330 patent including the right to sue for and collect past, present and future damages and to seek and obtain injunctive or any other relief for infringement of the '330 patent.

DEFENDANTS' INFRINGING PRODUCTS AND METHODS

13. UMC is in the business of manufacturing semiconductors or integrated circuits for others. Using its own processes and techniques, UMC makes chips to the design specifications of customers in industries such as communications, consumer and computer products, with a focus on high growth, large volume applications, including for networking, telecommunications, internet, multimedia and personal electronic devices. UMC publicly represents itself as one of the world's largest independent semiconductor foundries and a leader in semiconductor manufacturing process technologies. UMC's customers include fabless design companies, which design, develop and distribute semiconductor products but do not maintain internal manufacturing capacity, and integrated device manufacturers, which have their own manufacturing as well as design, development, sales and distribution. UMC owns or controls and operates semiconductor fabrication facilities in Taiwan, Singapore and China. UMC's sales in the U.S. and North America are made through its wholly-owned subsidiary UMC-USA.

14. Defendants make, use, sell, offer for sale, and/or import into the United States integrated circuit devices for use in devices such as field programmable gate array ("FPGA") devices, system on chip ("SoC") devices, wireless communications modems, application processors, cellular baseband processors, and other products incorporating such devices. Defendants' integrated circuit products are utilized in devices such as mobile phones, tablets, personal computers, wearable electronics, industrial and automotive systems, high-speed networking gear and other commercial and consumer applications. Defendants primarily supply their semiconductor devices in wafer form, knowing and intending that they are further configured into finished semiconductor products that have been assembled and tested. Defendants' customers include integrated device manufacturers, such as Intel and

STMicroelectronics, and fabless design companies, such as Xilinx, Broadcom, MediaTek, Realtek, Qualcomm and Novatek.

15. Defendants have continued to develop and enhance their process technologies to enable the manufacture of semiconductor devices with smaller geometries, allowing the production of more integrated circuit dice per wafer. Defendants market and promote their 40-nanometer process node technology as supporting high performance and low power requirements of many customers who have engaged with Defendants for the design and high volume production of integrated circuits based on the 40nm process technology. Defendants have represented that their 40nm process node utilizes techniques such as immersion lithography, ultra shallow junction transistor design, mobility enhancement techniques, and ultra low-k dielectrics for maximum power and performance optimization. Defendants' 40nm process consists of a low power platform adapted for low power and low leakage design requirements for mobile and consumer applications, and a generic platform that is optimized for a broad range of consumer and high-speed applications.

16. Defendants have also implemented 28nm process technologies for applications that require the highest performance with the lowest power leakage. Their 28nm process technology platform includes the UMC 28nm High Performance Low Power (28HLP) process, which utilizes poly SiON technologies. Defendants market the 28HLP process for portable applications and consumer electronics such as mobile phones, wireless ICs and TVs. Defendants have also implemented high-k/metal gate stack technologies within their 28nm process node. Defendants provide their 28HPCU process for a broad range of devices such as application processors, cellular baseband processors, and other integrated circuits for applications such as WLAN, tablet computers, FPGAs and networking gear. Defendants' 28HPCU+ process

technology offers improved transistor performance, and their 28uLP process offers lower core Vcc for ultra low power system on chip devices and other integrated circuits for applications such as wearable consumer devices, Internet of Things and automotive systems.

17. Despite not having a license to the '611 patent, Defendants have used the fabrication methods claimed therein in making integrated circuit devices using their 40nm and 28nm process node technologies. Despite not having a license to the '372 or '330 patents, Defendants' integrated circuit products made using their 40nm and 28nm process node technologies adopt the designs claimed in these patents.

FIRST CAUSE OF ACTION – INFRINGEMENT OF THE '372 PATENT

18. Plaintiff hereby repeats and re-alleges the allegations contained in paragraphs 1 to 17, as if fully set forth herein.

19. Defendants, directly and/or through their subsidiaries, affiliates, agents, and/or business partners, have in the past and continue to directly infringe the '372 patent, including at least claims 1, 4, 5 and 6, pursuant to 35 U.S.C. § 271(a) by using, selling, offering to sell, and/or importing integrated circuit devices that embody the inventions claimed in the '372 patent, within the United States and within this District. In violation of the '372 patent, for example, Defendants' accused integrated circuit devices include: an integrated circuit in and on a silicon substrate having an active region including a field effect transistor with a source and a drain and a gate, all of which a conductive contact is made comprising: a single crystalline silicon substrate with a upper surface region; a shallow junction for each of the source and drain of the transistor underlying said upper surface of the silicon substrate; a metal silicide layer having a lower surface disposed adjacent the shallow junction of each of the source and drain in the silicon substrate and above said upper surface of the silicon substrate; and an epitaxial silicon layer

disposed between said upper silicon surface and said lower surface of metal silicide and adjacent the shallow junction of each of the source and drain, whereby the metal silicide does not extend below the upper silicon surface and encroach upon the shallow junction of each of the source and the drain.

20. Defendants have been and are engaged in one or more of these direct infringing activities related to their integrated circuit devices having transistors and related structures manufactured using their 40nm process node, a representative example being the integrated circuit devices manufactured for Xilinx for resale as the Xilinx XC6VLX130 Virtex-6 FPGA products. Defendants' integrated circuit devices having transistors and related structures manufactured using their 28nm HLP, 28nm HPCU, 28nm HPCU+ and 28nm uLP process nodes are also infringing, a representative example being the integrated circuit devices manufactured for Qualcomm for resale as the Qualcomm MDM9625M LTE Modem.

21. On information and belief, integrated circuit devices made using any of the 40nm, 28nm HLP, 28nm HPCU, 28nm HPCU+ and 28nm uLP process nodes infringe at least claims 1, 4 and 6 of the '372 patent, and integrated circuit devices made using any of the 40nm and the 28nm HLP process nodes infringe at least claim 5 of the '372 patent. Such infringing integrated circuits are referred to hereinafter as "the '372 Accused Products."

22. Defendants, directly and/or through their subsidiaries, affiliates, agents, and/or business partners, have been and are now indirectly infringing the '372 patent, including at least claims 1, 4, 5 and 6, pursuant to 35 U.S.C. § 271(b) by actively inducing acts of direct infringement performed by others. Defendants have actual notice of the '372 patent and the infringement alleged herein at least upon the service of this Complaint. Upon information and belief, UMC has numerous lawyers and other active agents of UMC and of its owned and

controlled subsidiaries who regularly review patents and published patent applications relevant to technology in the fields of the Patents in Suit, specifically including patents directed to integrated circuit devices issued to competitors such as AMD, the original assignee of the '372 patent. Upon information and belief, UMC itself has been issued over 4,470 patents, including over 200 patents prosecuted in the USPTO in the same classifications as the '372 patent, giving Defendants intimate knowledge of the art in fields relevant to this civil action. UMC has had previous actual notice of the '372 patent prior to the filing of this Complaint at least through its efforts to patent related technologies. The '372 patent is listed on the face of U.S. Patent No. 6,221,767 ("the '767 patent") issued to UMC on April 24, 2001, indicating that it was among the references cited against and considered by the USPTO and UMC during prosecution of '767 patent. Accordingly, UMC has had actual notice of the '372 patent since at least the issue date of the '767 patent. The timing, circumstances and extent of UMC and its subsidiary UMC-USA obtaining actual knowledge of the '372 patent prior to the commencement of this lawsuit will be confirmed during discovery.

23. Upon gaining knowledge of the '372 patent, it was, or became, apparent to Defendants that the manufacture, sale, importing, offer for sale and use of their '372 Accused Products results in infringement of the '372 patent. Upon information and belief, Defendants have continued and will continue to engage in activities constituting inducement of infringement, notwithstanding their knowledge, or willful blindness thereto, that the activities they induce result in infringement of the '372 patent.

24. The '372 Accused Products are intended for integration into products known to be sold widely in the United States. UMC and its subsidiaries make integrated circuit devices that embody the inventions claimed in the '372 patent, which devices infringe when they are

imported into, or sold, used, or offered for sale in, the United States. Defendants indirectly infringe by inducing customers (including fabless design companies and integrated semiconductor device manufacturers) and other downstream parties (such as makers of mobile devices, desktop computers and other devices) to import products that incorporate integrated circuit devices embodying inventions claimed in the '372 patent, or to sell or use such products, or offer them for sale, in the United States. For example, Defendants induce fabless design companies, integrated semiconductor device manufacturers, importers, resellers, and others who purchase or otherwise obtain devices manufactured at UMC's overseas facilities to import devices embodying inventions recited in claims of the '372 patent, or to sell or use such devices, or offer them for sale in the United States without authority.

25. Defendants encourage customers, resellers or others to import into the United States and sell and use in the United States the '372 Accused Products embodying inventions claimed in the '372 patent with knowledge and the specific intent to cause the acts of direct infringement performed by these third parties. On information and belief, after Defendants obtained knowledge of the '372 patent, the '372 Accused Products have been and will continue to be imported into the United States and sold in large volumes by themselves and by others, such as customers, distributors and resellers. Defendants work closely with their customers in the process of finalizing circuit designs and planning for the preparation of masks to be used in the manufacturing process, so that these aspects of the manufacturing process are optimized for Defendants' process technologies and equipment. Defendants also offer their customers outsourced semiconductor assembly and test services. Defendants are aware that the '372 Accused Products are integral components of the products incorporating them, that the infringing integrated circuits are built into the products and cannot be removed or disabled by a purchaser

of the products containing the infringing integrated circuit devices, such that Defendants' customers will infringe one or more claims of the '372 patent by incorporating such integrated circuit devices in other products, and that subsequent importation, sale and use of such products in the United States would be a direct infringement of the '372 patent. Therefore, Defendants are aware that their customers will infringe one or more claims of the '372 patent by selling, offering for sale, importing, and/or using the products supplied by Defendants.

26. Defendants directly benefit from and actively and knowingly encourage customers', resellers', and users' importation of these products into the United States and sale and use within the United States. Defendants actively encourage customers, resellers and downstream users to import, use, and sell in the United States the '372 Accused Products that they manufacture and supply, including through advertising, marketing, and sales activities directed at United States sales. On information and belief, Defendants are aware of the size and importance of the United States market for customers of their products, and also distribute or supply these products intended for importation, use, and sale in the United States. Defendants routinely market their infringing integrated circuit products to third parties for inclusion in products that are sold to customers in the United States. Defendant UMC-USA provides a direct sales outlet for these products in the United States. Defendants' marketing efforts show that they have specifically intended to and have induced direct infringement in the United States.

27. Defendants have engaged and will continue to engage in additional activities to specifically target the United States market for the '372 Accused Products and actively induce manufacturers, importers, resellers, customers, and end users to directly infringe one or more claims of the '372 patent in the United States. For example, Defendants have showcased their semiconductor manufacturing capabilities and process technologies at least through written

materials distributed in the United States and through the www.umc.com website in an effort to showcase their process technology, manufacturing, testing, packaging, and market applications, and to encourage customers to engage Defendants to produce integrated circuits for inclusion in the customers' devices and products. These materials target fabless design companies and integrated semiconductor device manufacturers and generally companies that make, use, offer to sell, sell, or import in the United States products that use integrated circuit devices such as those made by Defendants. Defendants derive significant revenue by selling the '372 Accused Products to third parties who directly infringe the '372 patent in the United States.

28. Defendants' extensive sales and marketing efforts, sales volume, and partnerships all evidence their intent to induce companies to infringe one or more claims of the '372 patent by, using, offering to sell, selling, or importing products that incorporate the '372 Accused Products, in the United States. Defendants have had specific intent to induce infringement or have been willfully blind to the direct infringement they are inducing.

29. Upon information and belief, Defendants have continued and will continue to engage in activities constituting contributory infringement of the '372 patent, including at least claims 1, 4, 5 and 6 pursuant to 35 U.S.C. § 271(c). Defendants contributorily infringe with knowledge that the '372 Accused Products, or the use thereof, infringe the '372 patent. Defendants knowingly and intentionally contributed to the direct infringement of the '372 patent by others by supplying these integrated circuit devices that embody a material part of the claimed invention of the '372 patent, which are known by the Defendants to be specially made or adapted for use in an infringing manner. For example, and without limitation, the '372 Accused Products are used in various end products, such as computers, networking gear and mobile telephones. The '372 Accused Products are not staple articles or commodities of commerce suitable for non-

infringing use and are especially made for or adapted for use in infringing the '372 patent. There are no substantial uses of the '372 Accused Products that do not infringe the '372 patent. By contributing a material part of the infringing computing products sold, offered for sale, imported, and used by their customers, resellers and users, Defendants have been and are now indirectly infringing the '372 patent under 35 U.S.C. § 271(c).

30. Defendants' direct and indirect infringement of the '372 patent has injured Lone Star, and Lone Star is entitled to recover damages adequate to compensate for such infringement pursuant to 35 U.S.C. § 284. Unless they cease their infringing activities, Defendants will continue to injure Lone Star by infringing the '372 patent.

31. On information and belief, Defendants acted egregiously and with willful misconduct in that their actions constituted direct or indirect infringement of a valid patent, and this was either known or so obvious that Defendants should have known about it. Defendants continue to infringe the '372 patent by making, using, selling, offering for sale and importing in the United States the '372 Accused Products, and to induce the direct infringement of others performing these acts, or they have acted at least in reckless disregard of Lone Star's patent rights. On information and belief, Defendants will continue their infringement notwithstanding actual knowledge of the '372 patent and without a good faith basis to believe that their activities do not infringe any valid claim of the '372 patent. All infringement of the '372 patent following Defendants' knowledge of the '372 patent is willful and Lone Star is entitled to treble damages and attorneys' fees and costs incurred in this action under 35 U.S.C. §§ 284 and 285.

SECOND CAUSE OF ACTION – INFRINGEMENT OF THE '611 PATENT

32. Plaintiff hereby repeats and re-alleges the allegations contained in paragraphs 1 to 17, as if fully set forth herein.

33. Defendants, directly and/or through their subsidiaries, affiliates, agents, and/or business partners, have in the past and continue to directly infringe the '611 patent pursuant to 35 U.S.C. § 271(g) by importing, using, selling, or offering to sell integrated circuit devices in the United States made using the methods claimed in the '611 patent, including at least claims 1, 2, 3, 5, 8, 9, 10, 12 and 15. For example, Defendants use, sell, offer for sale, and/or import integrated circuit devices having substantially uniformly sized spacers on transistor gate arrangements within semiconductor devices on a common substrate, and made by practicing the steps of: (a) forming a plurality of gate arrangements on a top surface of the substrate, wherein two of the plurality of gate arrangements are positioned parallel to one another and separated by a defined space; (b) forming a dielectric layer over at least a portion of the two gate arrangements and at least a portion of the defined space; (c) removing portions of the dielectric layer to form a plurality of spacers, wherein each of the plurality of spacers physically contacts one of the two gate arrangements and the substrate, and wherein the spacers located within the defined space each have a base width that is approximately the same; (d) configuring one of the two gate arrangements to control an electrical current between a source region and a drain region formed in the substrate; and (e) configuring the remaining one of the two transistor gate arrangements to be non-operational. Defendants also use, sell, offer for sale and/or import integrated circuit devices having a controlled with of a spacer in a transistor arrangement, and made by practicing the steps of: (a) forming an operational transistor gate arrangement on a substrate at a first position and a non-operational transistor gate arrangement at a second position on the substrate, such that the operational and non-operational transistor gate arrangements are separated and adjacent to each other with a space therebetween; (b) forming a dielectric layer over at least a portion of the operational and non-operational transistor gate arrangements and

within the space; (c) removing portions of the dielectric layer to form a first spacer that physically contacts a sidewall of the operational transistor gate arrangement and the substrate and extends into the space, and a second spacer that physically contacts a sidewall of the non-operational transistor gate arrangement and the substrate and extends into the space, and wherein each of the first and second spacers extends into the space substantially the same distance. Defendants also use, sell, offer for sale, and/or import integrated circuit devices having spacers on a plurality of polysilicon lines, and made by practicing the steps of: (a) forming a plurality of polysilicon lines on a top surface of a substrate; (b) forming at least one dummy polysilicon line on the substrate, the dummy polysilicon line being substantially parallel to at least a portion of one of the polysilicon lines and separated from the portion of the one of the polysilicon lines by a defined space that has a critical dimension; (c) covering the polysilicon lines, the at least one dummy polysilicon line and the top surface of the substrate below the defined space, with at least one dielectric layer; and (d) removing portions of the at least one dielectric layer to form a plurality of separate dielectric spacers each of which contacts a sidewall of one of the plurality of polysilicon lines and the substrate, and a plurality of separate dummy dielectric spacers that are connected to the at least one dummy polysilicon line and the substrate. Defendants directly infringe when they import, use, sell, or offer for sale in the United States integrated circuit devices made using the method steps recited in the claims.

34. Defendants have been and are engaged in one or more of these direct infringing activities related to their integrated circuit devices having transistors and related structures manufactured using their 40nm process node, a representative example being the integrated circuit devices manufactured for Xilinx for resale as the Xilinx XC6VLX130 Virtex-6 FPGA products. Defendants' integrated circuit devices having transistors and related structures

manufactured using their 28nm HLP, 28nm HPCU, 28nm HPCU+ and 28nm uLP process nodes are also infringing, a representative example being the integrated circuit devices manufactured for Qualcomm for resale as the Qualcomm MDM9625M LTE Modem.

35. On information and belief, integrated circuit devices made using any of the 40nm, 28nm HLP, 28nm HPCU, 28nm HPCU+ and 28nm uLP process nodes infringe at least claims 1, 5 and 15 of the '611 patent, and integrated circuit devices made using any of the 40nm and the 28nm HLP process nodes infringe at least claim 2, 3, 8, 9, 10 and 12 of the '611 patent. Such infringing integrated circuits are referred to hereinafter as "the '611 Accused Products."

36. Defendants, directly and/or through their subsidiaries, affiliates, agents, and/or business partners, have been and are now indirectly infringing the '611 patent, including at least claims 1, 2, 3, 5, 8, 9, 10, 12 and 15, pursuant to 35 U.S.C. § 271(b) by actively inducing acts of direct infringement performed by others. Defendants have actual notice of the '611 patent and the infringement alleged herein at least upon the service of this Complaint. Upon information and belief, UMC has numerous lawyers and other active agents of UMC and of its owned and controlled subsidiaries who regularly review patents and published patent applications relevant to technology in the fields of the Patents in Suit, specifically including patents directed to semiconductor memory devices issued to competitors such as AMD, the original assignee of the '611 patent. Upon information and belief, UMC has been issued over 4,470 patents, including over 170 patents prosecuted in the USPTO in the same classifications as the '611 patent, giving Defendants intimate knowledge of the art in fields relevant to this civil action. UMC has had previous actual notice of the '611 patent prior to the filing of this Complaint at least through its efforts to patent related technologies. The '611 patent is listed on the face of U.S. Patent No. 6,344,398 ("the '398 patent") issued to UMC on February 5, 2002, indicating that it was among

the references cited against and considered by the USPTO and UMC during prosecution of '398 patent. Accordingly, UMC has had actual notice of the '611 patent since at least the issue date of the '398 patent. The timing, circumstances and extent of UMC and its subsidiary UMC-USA obtaining actual knowledge of the '611 patent prior to the commencement of this lawsuit will be confirmed during discovery.

37. Upon gaining knowledge of the '611 patent, it was, or became, apparent to Defendants that the manufacture, sale, importing, offer for sale, and use of their '611 Accused Products results in infringement of the '611 patent. Upon information and belief, Defendants have continued and will continue to engage in activities constituting inducement of infringement, notwithstanding their knowledge, or willful blindness thereto, that the activities they induce result in infringement of the '611 patent.

38. The '611 Accused Products are intended for integration into products known to be sold widely in the United States. UMC and its subsidiaries make integrated circuit devices using methods claimed in the '611 patent, which devices infringe when they are imported into, or sold, used, or offered for sale in, the United States. Defendants indirectly infringe by inducing direct customers (including fabless design companies and integrated semiconductor device manufacturers) and other downstream parties (such as makers of mobile devices, desktop computers and other devices) to import products that incorporate integrated circuit devices made using the methods recited in claims of the '611 patent, or to sell or use such products, or offer them for sale, in the United States. For example, Defendants induce fabless design companies, integrated semiconductor device manufacturers, importers, resellers, and others who purchase or otherwise obtain devices manufactured at UMC's overseas facilities to import devices made

using the methods recited in claims of the '611 patent, or to sell or use such devices, or offer them for sale in the United States without authority.

39. Defendants encourage customers, resellers or others to import into the United States and sell and use in the United States the '611 Accused Products made using the methods recited in the claims of the '611 patent with knowledge and the specific intent to cause the acts of direct infringement performed by these third parties. On information and belief, after Defendants obtained knowledge of the '611 patent, the '611 Accused Products have been and will continue to be imported into the United States and sold in large volumes by themselves and by others, such as customers, distributors and resellers. Defendants work closely with their customers in the process of finalizing circuit designs and planning for the preparation of masks to be used in the manufacturing process, so that these aspects of the manufacturing process are optimized for Defendants' process technologies and equipment. Defendants also offer their customers outsourced semiconductor assembly and test services. Defendants are aware that the '611 Accused Products are always made using the same fabrication methods under Defendants' direction and control such that Defendants' customers will infringe one or more claims of the '611 patent by incorporating such integrated circuit devices in other products, and that subsequent importation, sale and use of such products in the United States would be a direct infringement of the '611 patent. Therefore, Defendants are aware that their customers will infringe the '611 patent by importing, selling and using the products supplied by Defendants.

40. Defendants directly benefit from and actively and knowingly encourage customers', resellers', and users' importation of these products into the United States and sale and use within the United States. Defendants actively encourage customers, resellers and downstream users to import, use, and sell in the United States the '611 Accused Products that

they manufacture and supply, including through advertising, marketing, and sales activities directed at United States sales. On information and belief, Defendants are aware of the size and importance of the United States market for customers of their products, and also distribute or supply these products intended for importation, use, and sale in the United States. Defendants routinely market their infringing products to third parties for inclusion in products that are sold to customers in the United States. Defendant UMC-USA provides a direct sales outlet for these products in the United States. Defendants' marketing efforts show that they have specifically intended to and have induced direct infringement in the United States.

41. Defendants have engaged and will continue to engage in additional activities to specifically target the United States market for the '611 Accused Products and actively induce manufacturers, importers, resellers, customers, and end users to directly infringe one or more claims of the '611 patent in the United States. For example, Defendants have showcased their semiconductor manufacturing capabilities and process technologies at least through written materials distributed in the United States and through the www.umc.com website in an effort to showcase their process technology, manufacturing, testing, packaging, and market applications, and to encourage customers to engage Defendants to produce integrated circuits for inclusion in the customer's devices and products. These materials target fabless design companies and integrated semiconductor device manufacturers and generally by companies that make, use, offer to sell, sell, or import in the United States products that use integrated circuit devices such as those made by Defendants. Defendants derive significant revenue by selling the '611 Accused Products to third parties who directly infringe the '611 patent in the United States.

42. Defendants' extensive sales and marketing efforts, sales volume, and partnerships all evidence their intent to induce companies to infringe one or more claims of the '611 patent

by, using, offering to sell, selling, or importing products that incorporate the '611 Accused Products in the United States. Defendants have had specific intent to induce infringement or have been willfully blind to the direct infringement they are inducing.

43. Defendants' direct and indirect infringement of the '611 patent has injured Lone Star, and Lone Star is entitled to recover damages adequate to compensate for such infringement pursuant to 35 U.S.C. § 284. Unless they cease their infringing activities, Defendants will continue to injure Lone Star by infringing the '611 patent.

44. On information and belief, Defendants acted egregiously and with willful misconduct in that their actions constituted direct or indirect infringement of a valid patent, and this was either known or so obvious that Defendants should have known about it. Defendants continue to infringe the '611 patent by making, using, selling, offering for sale and importing in the United States the '611 Accused Products and to induce the direct infringement of others performing these acts, or they have acted at least in reckless disregard of Lone Star's patent rights. On information and belief, Defendants will continue their infringement notwithstanding actual knowledge of the '611 patent and without a good faith basis to believe that their activities do not infringe any valid claim of the '611 patent. All infringement of the '611 patent following Defendants' knowledge of the '611 patent is willful and Lone Star is entitled to treble damages and attorneys' fees and costs incurred in this action under 35 U.S.C. §§ 284 and 285.

THIRD CAUSE OF ACTION – INFRINGEMENT OF THE '330 PATENT

45. Plaintiff hereby repeats and re-alleges the allegations contained in paragraphs 1 to 17, as if fully set forth herein.

46. Defendants, directly and/or through their subsidiaries, affiliates, agents, and/or business partners, have in the past and continue to directly infringe the '330 patent, including at

least claims 1, 2, 4 and 5, pursuant to 35 U.S.C. § 271(a) by using, selling, offering to sell, and/or importing integrated circuit devices that embody the inventions claimed in the '330 patent, within the United States and within this District. In violation of the '330 patent, for example, Defendants' accused integrated circuit devices include: (a) a semiconductor substrate having a semiconductor device provided thereon; (b) a first dielectric layer formed over the semiconductor substrate having a first opening provided therein; (c) a first conductor core filling the first opening and connected to the semiconductor device; (d) an etch stop layer of silicon nitride formed over the first dielectric layer and the first conductor core, the etch stop layer having a dielectric constant below 5.5; (e) a second dielectric layer formed over the etch stop layer and having a second opening provided therein open to the first conductor core; and (f) a second conductor core filling the second opening and connected to the first conductor core.

47. Defendants have been and are engaged in one or more of these direct infringing activities related to their integrated circuit devices manufactured using their 40nm process node, a representative example being the integrated circuit devices manufactured for Xilinx for resale as the Xilinx XC6VLX130 Virtex-6 FPGA products. Defendants' integrated circuit devices manufactured using their 28nm HLP, 28nm HPCU, 28nm HPCU+ and 28nm uLP process nodes are also infringing, a representative example being the integrated circuit devices manufactured for Qualcomm for resale as the Qualcomm MDM9625M LTE Modem. On information and belief, integrated circuit devices made using any of the 40nm, 28nm HLP, 28nm HPCU, 28nm HPCU+ and 28nm uLP process nodes infringe at least claims 1, 2, 4 and 5 of the '330 patent. Such infringing integrated circuits are referred to hereinafter as "the '330 Accused Products."

48. Defendants, directly and/or through their subsidiaries, affiliates, agents, and/or business partners, have been and are now indirectly infringing the '330 patent, including at least

claims 1, 2, 4 and 5, pursuant to 35 U.S.C. § 271(b) by actively inducing acts of direct infringement performed by others. Defendants have actual notice of the '330 patent and the infringement alleged herein at least upon the service of this Complaint. Upon information and belief, UMC has numerous lawyers and other active agents of UMC and of its owned and controlled subsidiaries who regularly review patents and published patent applications relevant to technology in the fields of the Patents in Suit, specifically including patents directed to semiconductor memory devices issued to competitors such as AMD, the original assignee of the '330 patent. Upon information and belief, UMC itself has been issued over 4,470 patents, including over 103 patents prosecuted in the USPTO in the same classifications as the '330 patent, giving Defendants intimate knowledge of the art in fields relevant to this civil action. UMC has had previous actual notice of the '330 patent prior to the filing of this Complaint at least through its efforts to patent related technologies. The timing, circumstances and extent of UMC and its subsidiary UMC-USA obtaining actual knowledge of the '330 patent prior to the commencement of this lawsuit will be confirmed during discovery.

49. Upon gaining knowledge of the '330 patent, it was, or became, apparent to Defendants that the manufacture, sale, importing, offer for sale, and use of their '330 Accused Products results in infringement of the '330 patent. Upon information and belief, Defendants have continued and will continue to engage in activities constituting inducement of infringement, notwithstanding their knowledge, or willful blindness thereto, that the activities they induce result in infringement of the '330 patent.

50. The '330 Accused Products are intended for integration into products known to be sold widely in the United States. UMC and its subsidiaries make integrated circuit devices that embody the inventions claimed in the '330 patent, which devices infringe when they are

imported into, or sold, used, or offered for sale in, the United States. Defendants indirectly infringe by inducing customers (including fabless design companies and integrated semiconductor device manufacturers) and other downstream parties (such as makers of mobile devices, desktop computers and other devices) to import products that incorporate integrated circuit devices embodying inventions claimed in the '330 patent, or to sell or use such products, or offer them for sale, in the United States. For example, Defendants induce fabless design companies, integrated semiconductor device manufacturers, importers, resellers, and others who purchase or otherwise obtain devices manufactured at UMC's overseas facilities to import devices embodying inventions recited in claims of the '330 patent, or to sell or use such devices, or offer them for sale in the United States without authority.

51. Defendants encourage customers, resellers or others to import into the United States and sell and use in the United States the '330 Accused Products embodying inventions claimed in the '330 patent with knowledge and the specific intent to cause the acts of direct infringement performed by these third parties. On information and belief, after Defendants obtained knowledge of the '330 patent, the '330 Accused Products have been and will continue to be imported into the United States and sold in large volumes by themselves and by others, such as customers, distributors and resellers. Defendants work closely with their customers in the process of finalizing circuit designs and planning for the preparation of masks to be used in the manufacturing process, so that these aspects of the manufacturing process are optimized for Defendants' process technologies and equipment. Defendants also offer their customers outsourced semiconductor assembly and test services. Defendants are aware that the '330 Accused Products are integral components of the products incorporating them, that the infringing integrated circuits are built into the products and cannot be removed or disabled by a purchaser

of the products containing the infringing integrated circuit devices, such that Defendants' customers will infringe one or more claims of the '330 patent by incorporating such integrated circuit devices in other products, and that subsequent importation, sale and use of such products in the United States would be a direct infringement of the '330 patent. Therefore, Defendants are aware that their customers will infringe one or more claims of the '330 patent by selling, offering for sale, importing, and/or using the products supplied by Defendants.

52. Defendants directly benefit from and actively and knowingly encourage customers', resellers', and users' importation of these products into the United States and sale and use within the United States. Defendants actively encourage customers, resellers and downstream users to import, use, and sell in the United States the '330 Accused Products that they manufacture and supply, including through advertising, marketing, and sales activities directed at United States sales. On information and belief, Defendants are aware of the size and importance of the United States market for customers of their products, and also distribute or supply these products intended for importation, use, and sale in the United States. Defendants routinely market their infringing integrated circuit products to third parties for inclusion in products that are sold to customers in the United States. Defendant UMC-USA provides a direct sales outlet for these products in the United States. Defendants' marketing efforts show that they have specifically intended to and have induced direct infringement in the United States.

53. Defendants have engaged and will continue to engage in additional activities to specifically target the United States market for the '330 Accused Products and actively induce manufacturers, importers, resellers, customers, and end users to directly infringe one or more claims of the '330 patent in the United States. For example, Defendants have showcased their semiconductor manufacturing capabilities and process technologies at least through written

materials distributed in the United States and through the www.umc.com website in an effort to showcase their process technology, manufacturing, testing, packaging, and market applications, and to encourage customers to engage Defendants to produce integrated circuits for inclusion in the customers' devices and products. These materials target fabless design companies and integrated semiconductor device manufacturers and generally companies that make, use, offer to sell, sell, or import in the United States products that use integrated circuit devices such as those made by Defendants. Defendants derive significant revenue by selling the '330 Accused Products to third parties who directly infringe the '330 patent in the United States.

54. Defendants' extensive sales and marketing efforts, sales volume, and partnerships all evidence their intent to induce companies to infringe one or more claims of the '330 patent by, using, offering to sell, selling, or importing products that incorporate the '330 Accused Products, in the United States. Defendants have had specific intent to induce infringement or have been willfully blind to the direct infringement they are inducing.

55. Upon information and belief, Defendants have continued and will continue to engage in activities constituting contributory infringement of the '330 patent, including at least claims 1, 2, 4 and 5, pursuant to 35 U.S.C. § 271(c). Defendants contributorily infringe with knowledge that the '330 Accused Products, or the use thereof, infringe the '330 patent. Defendants knowingly and intentionally contributed to the direct infringement of the '330 patent by others by supplying these integrated circuit devices that embody a material part of the claimed invention of the '330 patent, which are known by the Defendants to be specially made or adapted for use in an infringing manner. For example, and without limitation, the '330 Accused Products are used in various end products, such as computers, networking gear and mobile telephones. The '330 Accused Products are not staple articles or commodities of commerce suitable for non-

infringing use and are especially made for or adapted for use in infringing the '330 patent. There are no substantial uses of the '330 Accused Products that do not infringe the '330 patent. By contributing a material part of the infringing computing products sold, offered for sale, imported and used by their customers, resellers and users, Defendants have been and are now indirectly infringing the '330 patent under 35 U.S.C. § 271(c).

56. Defendants' direct and indirect infringement of the '330 patent has injured Lone Star, and Lone Star is entitled to recover damages adequate to compensate for such infringement pursuant to 35 U.S.C. § 284. Unless they cease their infringing activities, Defendants will continue to injure Lone Star by infringing the '330 patent.

57. On information and belief, Defendants acted egregiously and with willful misconduct in that their actions constituted direct or indirect infringement of a valid patent, and this was either known or so obvious that Defendants should have known about it. Defendants continue to infringe the '330 patent by making, using, selling, offering for sale, and importing in the United States the '330 Accused Products, and to induce the direct infringement of others performing these acts, or they have acted at least in reckless disregard of Lone Star's patent rights. On information and belief, Defendants will continue their infringement notwithstanding actual knowledge of the '330 patent and without a good faith basis to believe that their activities do not infringe any valid claim of the '330 patent. All infringement of the '330 patent following Defendants' knowledge of the '330 patent is willful and Lone Star is entitled to treble damages and attorneys' fees and costs incurred in this action under 35 U.S.C. §§ 284 and 285.

PRAYER FOR RELIEF

WHEREFORE, Plaintiffs prays for:

1. Judgment that the '372, '611 and '330 patents are each valid and enforceable;
2. Judgment that the '372, '611 and '330 patents are infringed by Defendants;
3. Judgment that Defendants' acts of patent infringement relating to the patents are willful;
4. An award of damages arising out of Defendants' acts of patent infringement, together with pre-judgment and post-judgment interest;
5. Judgment that the damages so adjudged be trebled in accordance with 35 U.S.C. § 284;
6. An award of Plaintiff's attorneys' fees, costs and expenses incurred in this action in accordance with 35 U.S.C. § 285; and
7. Such other and further relief as the Court may deem just and proper.

JURY DEMAND

Plaintiff demands trial by jury of all issues triable of right by a jury.

RESERVATION OF RIGHTS

Plaintiff's investigation is ongoing, and certain material information remains in the sole possession of Defendants or third parties, which will be obtained via discovery herein. Plaintiff expressly reserves the right to amend or supplement the causes of action set forth herein in accordance with Rule 15 of the Federal Rules of Civil Procedure.

Respectfully submitted,

Date: October 31, 2016

/s/ Timothy P. Maloney

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